

WHAT IS CLAIMED IS:

1. A safety steering column system for a motor vehicle that can be selectively configured upon entry into the motor vehicle of a driver in the event of an accident to control the movement of at least a steering wheel end region of the steering column away from the driver of the vehicle correlated to a driver's configuring parameters comprising
 - (a) a steering column comprised of an upper and a lower telescoping parts with the upper part including the steering wheel end region, with the telescoping parts of the steering column being mounted for telescoping toward the front of the vehicle,
 - (b) an adjustment mechanism intercoupling the telescoping parts of the steering column,
 - (c) a first sensing device for sensing a physical parameter related to the size of the driver when the driver has entered the motor vehicle and providing a first configuring output,
 - (d) a second sensing device for sensing a seat belt parameter of whether the driver who is seated in the motor vehicle has a seat belt fastened and providing a second configuring output,
 - (e) the adjustment mechanism including
 - (i) a lockable load absorber,
 - (ii) a triggerable unlocking device associated with the load absorber that when triggered unlocks the load absorber, and
 - (iii) at least one triggerable operator that when triggered positively moves the telescoping parts of the steering column together away from the driver, and
 - (f) a controller for receiving the outputs from the sensing devices and responsive to the received outputs for configuring the adjustment mechanism, when the driver enters the motor vehicle and prior to any accident, by controlling the triggerable unlocking device and the triggerable operator so that the adjustment mechanism operates to operate according to one of at least three preselected different and distinct operations.
2. The safety steering column system according to claim 1, wherein the adjustment mechanism includes an energy generator for the operator.

3. The safety steering column system according to claim 2, wherein the energy generator is one of a pyrotechnic gas generator and an electrical device.
4. The safety steering column system according to claim 1, wherein a pair of lockable load absorbers are provided, capable of being operated individually or simultaneously.
5. The safety steering column system according to claim 4 wherein the load absorbers have different absorbencies.
6. The safety steering column system according to claim 1, wherein the load absorber includes a deformation member.
7. The safety steering column system according to claim 6, wherein the deformation member is comprised of one of a cutting knife, material deforming bolts, and a deceleration carriage having at least two deceleration force steps.
8. The safety steering column system according to claim 1, wherein sensors sense and provide outputs to the controller of the driver's seat position, seat belt fastened status, driver's size, and at least one of driver's weight and driver's posture.
9. The safety steering column system according to claim 1, wherein the controller triggers the operator in dependence on the driver's seat position.
10. The safety steering column system according to claim 1, wherein the controller is responsive to a sensed output that is indicative of a predetermined distance or less between the driver and the steering wheel to condition the adjustment mechanism to trigger in case of an accident.

11. The safety steering column system according to claim 1, wherein the controller conditions the load absorber responsive to the output of the sensor for one of the driver's seat belt fastening status and seat position.
12. The safety steering column system according to claim 1, wherein the controller conditions the adjustment mechanism in the case of an accident by unlocking the load absorber responsive to the driver not wearing the seat belt.
13. The safety steering column system according to claim 1, wherein the first sensing device includes one of an electrical switch and optical switch juxtaposed with respect to seat guiding rails.
14. The safety steering column system according to claim 1, wherein the second sensing device includes one of an electrical and optical buckle usage switch juxtaposed with respect to the seat belt buckle for the driver's seat belt.
15. A safety steering column system for a motor vehicle that can be selectively configured upon entry into the motor vehicle of a driver in the event of an accident to control the movement of at least a steering wheel end region of the steering column away from the driver of the vehicle correlated to a driver's configuring parameters comprising,
- (a) a steering column comprised of an upper and a lower telescoping parts with the upper part including the steering wheel end region, with the telescoping parts of the steering column being mounted for telescoping toward the front of the vehicle,
 - (b) an adjustment mechanism intercoupling the telescoping parts of the steering column,
 - (c) a first sensing device for sensing a physical parameter related to the size of the driver when the driver has entered the motor vehicle and providing a first configuring output,

(d) a second sensing device for sensing a seat belt parameter of whether the driver who is seated in the motor vehicle has a seat belt fastened and providing a second configuring output,

(e) the adjustment mechanism including

- (i) a pair of load absorbers having different load absorbency,
- (ii) a lock associated with each load absorber,
- (iii) a triggerable unlocking device associated with each lock that when triggered unlocks the associated lock, and
- (iv) at least one operator including a triggerable device to generate energy for the operator so that when the device is triggered and energy is generated to drive the operator, the operator will positively move the telescoping parts of the steering column together away from the driver, and

(f) a controller for receiving the outputs from the sensing devices and responsive to the received outputs for configuring the adjustment mechanism, when the driver enters the motor vehicle and prior to any accident, by controlling the triggerable unlocking device and the triggerable operator so that the adjustment mechanism operates to operate according to one of at least three preselected different and distinct operations.

16. The safety steering column system according to claim 15, wherein the adjustment mechanism includes an energy generator for the operator.

17. The safety steering column system according to claim 16, wherein the energy generator is one of a pyrotechnic gas generator and an electrical device.

18. The safety steering column system according to claim 15, wherein the load absorbers include a deformation member.

19. The safety steering column system according to claim 18, wherein the deformation members are comprised of one of material deforming bolts, a deceleration carriage having at least two deceleration force steps and combinations thereof.

20. The safety steering column system according to claim 15, wherein sensors sense and provide outputs to the controller of the driver's seat position, seat belt fastened status, driver's size, and at least one of driver's weight and driver's posture.

21. The safety steering column system according to claim 15, wherein the controller triggers the operator in dependence on the driver's seat position.

22. The safety steering column system according to claim 15, wherein the controller is responsive to a sensed output that is indicative of a predetermined distance or less between the driver and the steering wheel to condition the adjustment mechanism to trigger in case of an accident.

23. The safety steering column system according to claim 15, wherein the controller conditions the load absorbers responsive to the output of the sensor for one of the driver's seat belt fastening status and seat position.

24. The safety steering column system according to claim 15, wherein the controller conditions the adjustment mechanism in the case of an accident by unlocking the load absorber responsive to the driver not wearing a seat belt.

25. The safety steering column system according to claim 15, wherein the first sensing device includes one of an electrical switch and optical switch juxtaposed with respect to seat guiding rails.

26. The safety steering column system according to claim 15, wherein the second sensing device includes one of an electrical and optical buckle usage switch juxtaposed with respect to the seat belt buckle for the driver's seat belt.

27. The safety steering column system according to claim 15, wherein the first sensing device senses one of weight and height of the driver.

28. A bolt mechanism located within a load absorber that can be selectively configured to positively trigger and make the bolt ineffective in the operation of the load absorber comprising,

(a) a bolt mechanism including,

(i) a metal rod or bolt housed within a load absorber,

(ii) a bolt lock associated with the metal rod or bolt,

(iii) a triggerable bolt unlocking device associated with the metal rod or bolt that when triggered unlocks the associated bolt lock, and

(iv) a bolt operator including a triggerable bolt device to generate energy for the bolt operator so that when the bolt device is triggered and energy is generated to drive the bolt operator, the bolt operator will positively move the metal rod or bolt,

(b) a first sensing device for sensing a physical parameter related to the size of the driver when the driver has entered the motor vehicle and providing a first configuring output,

(c) a second sensing device for sensing a seat belt parameter of whether the driver who is seated in the motor vehicle has a seat belt fastened and providing a second configuring output, and

(d) a controller for receiving the outputs from the sensing devices and responsive to the received outputs for configuring the bolt mechanism, when the driver enters the motor vehicle and prior to any accident, by controlling the triggerable unlocking bolt device and the triggerable bolt operator so that the bolt mechanism operates to operate according to one of at least two preselected different and distinct operations.

29. The bolt mechanism according to claim 28, wherein the bolt mechanism includes an energy generator for the bolt operator.

30. The bolt mechanism according to claim 29, wherein the energy generator is one of an electrical device.

31. The bolt mechanism according to claim 28, wherein sensors sense and provide outputs to the controller of the driver's seat position, seat belt fastened status, driver's size, and at least one of driver's weight and driver's posture.
32. The bolt mechanism according to claim 28, wherein the controller triggers the bolt operator in dependence on the driver's seat position.
33. The bolt mechanism according to claim 28, wherein the controller is responsive to a sensed output that is indicative of a predetermined distance or less between the driver and the steering wheel to condition the bolt mechanism to trigger in case of an accident.
34. The bolt mechanism according to claim 28, wherein the controller conditions the bolt mechanism in the case of an accident by unlocking the bolt lock responsive to the driver not wearing a seat belt.
35. The bolt mechanism according to claim 28, wherein the first sensing device includes one of an electrical switch and optical switch juxtaposed with respect to seat guiding rails.
36. The bolt mechanism system according to claim 28, wherein the second sensing device includes one of an electrical and optical buckle usage switch juxtaposed with respect to the seat belt buckle for the driver's seat belt.
37. The bolt mechanism according to claim 28, wherein the first sensing device senses one of weight and height of the driver.